

Indian Standard

(Reaffirmed 2012)

SPECIFICATION FOR
MANDRELS, DENTAL, NO. 1, 2 AND 3

(Reaffirmed 2017)

(First Revision)

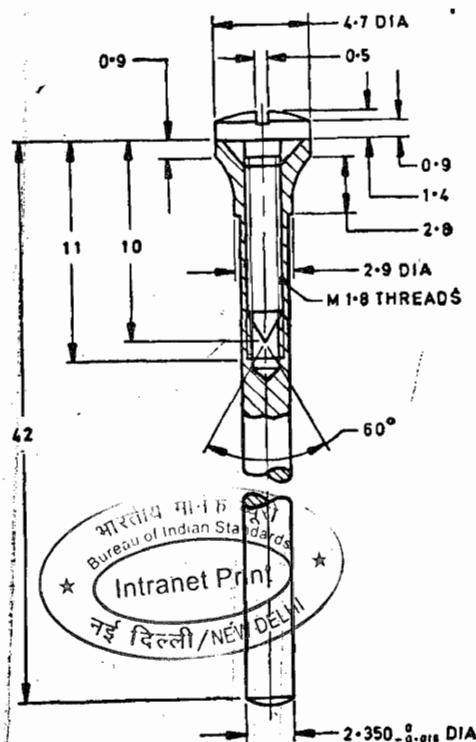
Dental Instruments Sectional Committee, CPDC 21; Dental Cutting and Filling Instruments Subcommittee, CPDC 21: 1 [Ref : Doc : CPDC 21 (1857)]

1. Scope — This standard specifies material, dimensions and other requirements for dental mandrels, No. 1, 2 and 3.

1.1 Mandrels No. 1 and 2 shall be used with straight handpiece whereas mandrel No. 3 shall be used with latch-type angle handpiece.

2. Material — Stainless steel conforming to Designation 30Cr13 of IS : 6603-1972 'Specification for stainless steel bars and flats'.

3. Shapes and Dimensions — As shown in Fig. 1 to 3.



All dimensions in millimetres.

FIG. 1 MANDREL, DENTAL, NO. 1, FOR STRAIGHT HANDPIECE

3.1 Unless specified otherwise in the figures, tolerances on various dimensions shall be as given below:

- a) ± 0.05 mm on dimensions up to 2.0 mm,
- b) ± 0.1 mm on dimensions above 2.0 mm and up to 5.0 mm,

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c) ± 0.2 mm on dimensions above 5.0 mm and up to 20.0 mm, and

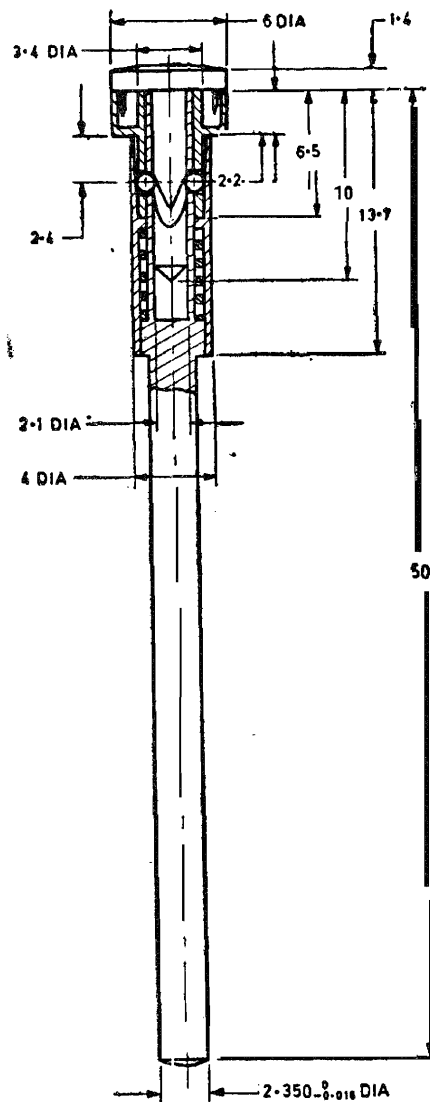
d) ± 0.5 mm on dimensions above 20.0 mm and up to 50.0 mm.

3.2 Tolerance on angular dimension shall be $\pm 2^\circ$.

4. **Heat Treatment** — The instrument shall be uniformly hardened and tempered to a hardness of 400 to 450 HV, when tested in accordance with IS : 1501 (Part 1)-1 984 'Method for Vickers hardness test for metallic materials: Part 1 HV 5 to HV 100 (second revision)'.

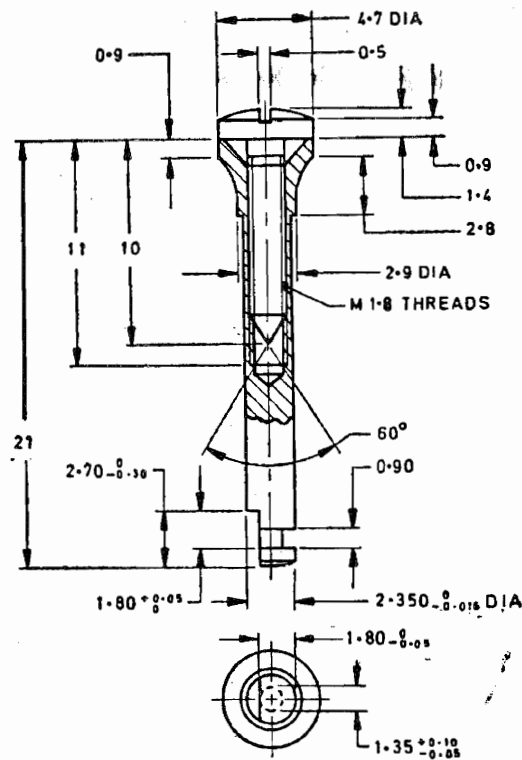
5. Workmanship

5.1 The plane of the top surface of the mandrel shall be at right angles to its long axis. The screw shall be exactly in the centre of the instrument to avoid eccentricity.



All dimensions in millimetres.

FIG. 2 MANDREL, DENTAL, NO. 2, FOR STRAIGHT HANDPIECE



All dimensions in millimetres.

FIG. 3 MANDREL, DENTAL. NO. 3, FOR LATCH-TYPE ANGLE HANDPIECE

5.2 Hard fibre washer of 1 mm thickness shall be provided with mandrels No. 1 and 3.

5.3 All edges shall be even and rounded.

6. Surface Condition

6.1 General — All surfaces shall be free from pores, crevices and grinding marks. The instruments shall be supplied free from residual scale, acid, grease and grinding and polishing materials. Compliance with these requirements shall be checked by inspection using normal vision (corrected, if necessary).

6.2 Surface Finish — The surface finish shall be one of, or a combination of, the following:

- a) Mirror polished;
- b) Reflection-reducing, for example satin finish, matt black finish; and
- c) An applied surface coating, for example for insulation purposes.

Note — The satin finish should be effected by an appropriate procedure, such as grinding, brushing, electropolishing and, in addition, satin finishing (glass beading or satin brushing). The finish should be uniform and smooth and it should reduce glare.

Instruments of mirror finish should be adequately ground to remove all surface imperfections and polished to remove grinding marks, resulting in a mirror finish. The mirror finish should be effected by an appropriate procedure, such as polishing, brushing, electropolishing, and mirror buffing.

6.3 Passivation and Final Treatment — The instruments shall be treated by a suitable passivation process, for example by electropolishing or by treatment with 10 percent (v/v) nitric acid solution for not less than 30 min at a temperature not less than 10°C and not exceeding 60°C. The instruments shall then be rinsed in water and dried in hot air.

7. Tests

7.1 *Fitting Test* — The mandrels shall fit properly into their respective handpieces.

7.2 *Corrosion Resistance Test* -The mandrels shall be tested in accordance with IS : 7531-1975 'Method for boiling and autoclaving test for corrosion resistance of stainless steel surgical instruments'. The mandrels shall show no sign of corrosion after the test.

8. Marking and Packing

8.1 The mandrels shall be legibly and indelibly marked with their designation number; the manufacturer's name, initials or recognized trade-mark; the words 'stainless steel' or letters 'ss'; and the country of manufacture.

8.2 Each instrument shall be put in a polyethylene bag or wrapped in wax paper. The instruments shall then be packed in cartons in accordance with the current trade practice,

8.2.1 Alternatively, the instruments may be packed as agreed to between the purchaser and the supplier.

8.3 The packages shall bear the name and designation number of the instruments; number of instruments in the package; the manufacturer's name, initials or recognized trade-mark; the words 'Stainless Steel'; and the country of manufacture.

8.4 *Standard Marking* — Details available with the Bureau of Indian Standards.

9. **Sampling** — Sampling procedure and acceptance criteria for the mandrels shall be as agreed to between the purchaser and the supplier. A recommended scheme for the same is given in Appendix A.

APPENDIX A

(Clause 9)

SAMPLING SCHEME AND CRITERIA FOR CONFORMITY FOR MANDRELS, DENTAL

A-1. **Lot** — In any consignment, all the mandrels of the same designation number, produced from the identical material under similar conditions and having same surface finish shall constitute a lot.

A-2. The number of mandrels to be selected from each lot shall depend upon the **size of the lot and shall be** in accordance with col 1 and 2 of Table 1.

TABLE 1 SCALE OF SAMPLING

(Clauses A-2, A-3.1 and A-3.2)

Lot Size (1)	Sample Size (2)	Sub-sample Size (3)
up to 50	3	1
51 to 100	5	1
101 to 150	8	2
151 to 300	13	2
301 and above	20	3

A-2.1 These instruments shall be selected from the lot at random and in order to ensure randomness of selection, procedures given in IS : 49051968 'Methods for random sampling' may be followed.

A-3. Number of Tests and Criteria for Conformity

A-3.1 All the instruments selected according to col 1 and 2 of Table 1 shall be examined for shape and dimensions, workmanship and surface condition (visual) and subjected to fitting test. An instrument in the sample failing to meet any of these requirements shall be considered as defective. The lot shall be considered as conforming to these requirements if no defective is found in the sample.

A-3.2 The lot having been found satisfactory according to A-3.1 shall be further tested for other requirements. For this purpose, a sub-sample of size given in col 3 of Table 1 shall be taken. These instruments in the sub-sample may be selected from those already examined according to A-3.1. Each instrument in the sub-sample shall be subjected to hardness and corrosion resistance tests. The lot shall be declared as conforming to the requirements of the specification if none of the instruments in the sub-sample fails in any of these tests.

EXPLANATORY NOTE

This standard was first issued in 1970. In this revision, tolerances on various dimensions have been specified, a recommended scheme of sampling has been added and the clauses on surface condition have been modified besides incorporating certain other modifications.